

We claim:

1. A catalyst formed by cavitation wherein the cavitation comprises passing a metal containing solution at elevated pressure and at a velocity into a cavitation chamber, wherein said cavitation chamber creates a controllable cavitation zone to form a cavitated product.
2. The catalyst of claim 1 wherein both high shear and at least some in situ calcination of the metal containing solution occur in the cavitation chamber.
3. The catalyst of claim 1 wherein the cavitation chamber comprises a flow-through channel having a flow area, internally containing a first element that produces a local constriction of the flow area, and having an outlet downstream of the local constriction; and a second element that produces a second local constriction positioned at the outlet, wherein a cavitation zone is formed immediately after the first element, and an elevated pressure zone is created between the cavitation zone and the second local constriction.
4. The catalyst of claim 3 wherein the velocity of the metal containing solution passing into the cavitation chamber is at a velocity sufficient to create cavitation bubbles to form downstream of the first element.
5. The catalyst of claim 1 wherein the metal containing solution is a metal salt solution.
6. The catalyst of claim 5 wherein the metal salt is selected from the group consisting of nitrate, acetate, chloride, sulfate, bromide, and mixtures thereof.
7. The catalyst of claim 6 wherein the metal in the metal containing solution is selected from the group consisting of cobalt, molybdenum, bismuth, lanthanum, iron, strontium, titanium, silver, gold, lead, platinum, palladium, yttrium,

- 5        zirconium, calcium, barium, potassium, chromium, magnesium, copper, zinc, and mixtures thereof.
8.       A silver catalyst on alumina support having the characteristics shown in Fig. 3 of the present invention.
- 9        A CuO composition having the characteristics of shown in Fig. 4 of the present invention.
- 10       A high temperature palladium catalyst comprised of a small grain material which is stable at temperatures of less than about 1200 degrees Celsius.